




**Best Practice Recommendation
Programming to Reduce Variability
and Enhance Value: How We Do It**

*RSNA Annual Meeting
November 26 – December 1, 2017*



©2017 Radiology Partners Inc. All rights reserved. Proprietary and confidential.



Presenters & Disclosure of Commercial Interest


Presenters:
Dr. Upma Rawal, Dr. Jay Bronner, Dr. Nina Kottler, Dr. Syed Zaidi, Dr. Richard Heller,
Jason Mitsky, Aaron Huang, Joyce Liang

Radiology Partners Research Institute
El Segundo, CA

Disclosures:
None of the authors nor their immediate family members have a financial
relationship with a commercial organization that has a direct or indirect interest in
the content.

©2017 Radiology Partners Inc. All rights reserved. Proprietary and confidential.

2


 radiology partners

Purpose

- Significant variability among radiologists in management of multiple medical conditions, including Incidental thyroid nodules (ITNs), Simple Ovarian Cysts (SOCs) and Abdominal Aortic Aneurysms (AAAs) [1-3]:
- Our radiology group, composed of locally-led practices across 9 states, developed and implemented an evidence-based Best Practice Recommendations (BPRs) program for management of these imaging findings.
- Our BPRs program is designed to enhance value (defined as quality/cost) by improving the quality of services provided by radiologists while simultaneously controlling costs.
 - Improved quality is reflected in decreased rates of unnecessary imaging and intervention (including thyroid biopsy), improved rates of necessary follow-up and intervention, and in the case of AAA, saved lives.
 - Cost savings are related to optimization of follow-up recommendations and lower rates of unnecessary imaging and intervention.

©2017 Radiology Partners Inc. All rights reserved. Proprietary and confidential.

3

 radiology partners

Methods & Materials: Development of BPRs

- Any radiologist in the practice can initiate the process by identifying an imaging finding suited for BPRs development, which then is reviewed and decided upon through consensus by a cohort of physician leaders.
- A core group of radiologists, who are specialists in the field, and the Director of Clinical Quality spearhead the BPRs development process by:
 - Conducting a thorough literature review
 - Developing a working draft
 - Sharing the draft with all the practice's radiologists for comments and discussion
 - Developing a final version of the BPR
- Finalized BPRs are implemented utilizing diverse educational processes, including teaching videos, emails, WebEx seminars, internal blogs, dictation macros and the practice's online educational portal
- Local leadership strategies that led to greater improvement in adherence to BPRs included review of scorecards at meetings of local practice boards and radiology departments as well as with individual radiologists as needed. Discussion at all meetings focused on opportunities and strategies to improve adherence.

©2017 Radiology Partners Inc. All rights reserved. Proprietary and confidential.

4

rp radiology partners

Methods & Materials: Evaluation of BPRs Adherence

- First BPR was developed for ITNs and implemented in early 2015 followed by BPRs for SOC and AAA surveillance 2016.
- To evaluate initial adherence to ITN BPRs, a group of our radiologists reviewed representative samples of CT chest, neck, and C-spine (CT c/n/s) studies with their reports across 7 RP sites in 6 states:
 - 1,670 CT c/n/s studies reviewed as baseline, prior to implementation of BPRs
 - 1,916 CT c/n/s studies reviewed post implementation of BPRs
 - The two sets of data were compared for adherence to RP ITN BPRs
- To maintain ongoing adherence to all 3 BPRs across all our local practices, monthly practice and radiologist-specific scorecards depicting adherence to the BPRs were developed and distributed to local practice leaders with intention of sustaining adherence to BPRs through providing actionable and timely feedback.
 - Data for development of scorecards was extracted from complex Natural Language Processing (NLP) algorithms that were formulated to search CT c/n/s, US pelvis, and CT abdomen/pelvis reports for key terms to evaluate for adherence to ITN, SOC, and AAA BPRs respectively.

©2017 Radiology Partners Inc. All rights reserved. Proprietary and confidential. 5

rp radiology partners

Results for Initial Evaluation of ITN BPRs Adherence Study at 7 RP Sites

Best Practice on All Nodules

Baseline: 56%
Post-Implementation: 92%

Significant Nodules

Baseline: 16%
Post-Implementation: 70%

Ultrasound Recommended Inappropriately

Baseline: 35%
Post-Implementation: 7%

©2017 Radiology Partners Inc. All rights reserved. 6

mp radiology partners

Results for Ongoing Adherence to ITN BPRs at RP's Local Practices

Incidental Thyroid Nodules Best Practice Composite Scores

	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
Practice 1						71	70	76	77	92	92	87
Practice 2	81	75	94	83	89	87	96	85	97	97	90	83
Practice 3	89	90	82	86	100	98	92	81	97	86	93	80
Practice 4	85	87	93	97	87	97	92	92	94	79	85	86
Practice 5	88	71	79	87	87	88	93	97	95	100	100	92
Practice 6	87	81	100	100	81	50	70	80		70	90	100
Practice 7						77	85	93	84	78	88	100
Practice 8	65	100	92	87	100	100	100	95	90	100	100	89
Practice 9	65	90	87	80	82	80	81	87	84	100	58	85
Practice 10	70	88	79	67	69	93	83	70	90	89	100	95
Practice 11	85	69	79	76	80	91	90	87	89	93	95	92
Practice 12	93	67	100	93	100	100	100	40	90	90	90	100
RP Average	82	79	86	81	85	83	79	82	88	91	92	89

Scores calculated by: 50% US recommended on Reported Significant Nodules, 50% no US recommended on Reported Insignificant Nodules

After initial improvement in adherence to ITN BPRs, NLP data mining of CT c/n/s reports documented slippage and inconsistent adherence to ITN BPRs.

To address this, rolling monthly scorecards utilizing NLP data from analysis of CT c/n/s reports were created and distributed beginning June 2016, 16 months post-implementation of ITN BPRs.

Improved and sustained adherence to ITN BPRs was seen at majority of our local practices post-distribution of monthly scorecards.

©2017 Radiology Partners Inc. All rights reserved. Proprietary and confidential.

mp radiology partners

Results for Ongoing Adherence to SOC and AAA BPRs at RP's Local Practices

Simple Ovarian Cysts

Best Practice Adherence on Reported Simple Cysts

4%

Baseline

73%

Current

Abdominal Aortic Aneurysm

Best Practice Adherence on Reported AAA

4%


Baseline

85%

Current

- Started with low adherence to best practice in the baseline analysis
- Post implementation of AAA and SOC BPRs:
 - 21x increase for AAA and 18x increase for SOC
- Our goal is to increase adherence to 90% for both
- Adhering to our AAA BPRs has the opportunity to save lives:
 - Supported by data from one of our hospitals that 6 of 15 ruptured AAAs over 3 years had missed follow-up from prior imaging.

©2017 Radiology Partners Inc. All rights reserved. Proprietary and confidential.

 radiology partners


Conclusion

Development & adoption of evidence-based BPRs for management of ITNs, SOCs, and AAAs followed by ongoing monitoring and feedback via monthly local practice and radiologist-specific scorecards produced significant improvement in adherence to the BPRs and resulted in:

1. Reduced variability in management of ITNs, SOCs, and AAAs
2. Sustained improvement in BPRs adherence
3. Enhanced patient care through improved quality

Our practice has demonstrated that this approach to improving clinical value by reducing variability through collaborative systematic implementation of BPRs for a spectrum of clinical entities can be successfully scaled practice-wide and can serve as a model for translation across radiology.

©2017 Radiology Partners Inc. All rights reserved. Proprietary and confidential. 9

 radiology partners

References; Questions and Comments

References:

1. Lehnert BE, Sandstrom CK, Gross JA, Dighe M, Linnau KF. Variability in management recommendations for incidental thyroid nodules detected on CT of the cervical spine in the emergency department. *Journal of the American College of Radiology* 2014; 11:681-685
2. Patel MD, et al. Managing incidental findings on abdominal and pelvic CT and MRI, part 1: white paper of the ACR incidental findings committee II on adnexal findings. *Journal of the American College of Radiology* 2013; 10:675-681
3. van Walraven C, et al. Incidence, follow-up, and outcomes of incidental abdominal aortic aneurysms. *Journal of Vascular Surgery* 2010; 52:282-289

Please address any questions or comments to:
upma.rawal@radpartners.com or
jason.mitsky@radpartners.com

Learn more about our practice by visiting:
www.radpartners.com

©2017 Radiology Partners Inc. All rights reserved. Proprietary and confidential. 10